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H4L LECCX

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GB 2289192 A EP 0762711 A2 WO 99/26393 A
WO 99/11048 A WO 98/54878 A JP 009098228 A
JP 009027840 A US 5867793 A

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(71) Applicant(s)
Samsung Electronics Co., Ltd.
(Incorporated in the Republic of Korea)
416 Maetan-dong, Paldal-gu, Suwon-city,
Kyungki-do, Republic of Korea

(72) Inventor(s)
Dae-Gun Goh

(74) Agent and/or Address for Service
Christopher Stephen Tunstall
Dibb Lupton Alsop, Fountain Precinct, Balm Green,
SHEFFIELD, S1 1RZ, United Kingdom

(54) Abstract Title

Recording and reproducing voice memos during a portable telephone call

(57) A portable telephone records a short voice memo during a call and reproduces the recorded short voice memo later. Upon detection of a voice record key input 113 during a call, the portable telephone converts an input voice signal to voice data, stores the voice data, and determines whether a stop key is input. Upon detection of the stop key input, the telephone stops storing the voice data and displays 115 an index number input request message. Upon detection of an index number input in response to the index number input request message, the telephone records the stored voice data in a voice memo table in association with the input index number, and determines whether a voice reproduce key is input. Upon detection of the voice reproduce key input, the telephone displays an index number input request message and determines whether the voice memo table has a voice memo corresponding to an input index number. When the voice memo table has a voice memo corresponding to the input index number, the telephone reproduces the voice memo using a speaker.

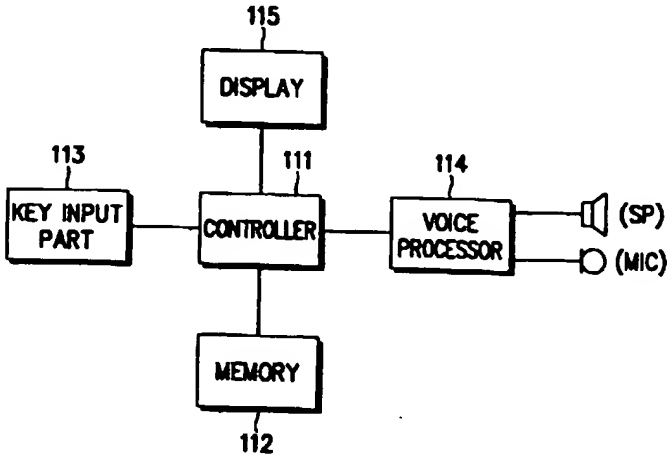

FIG. 1

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1995

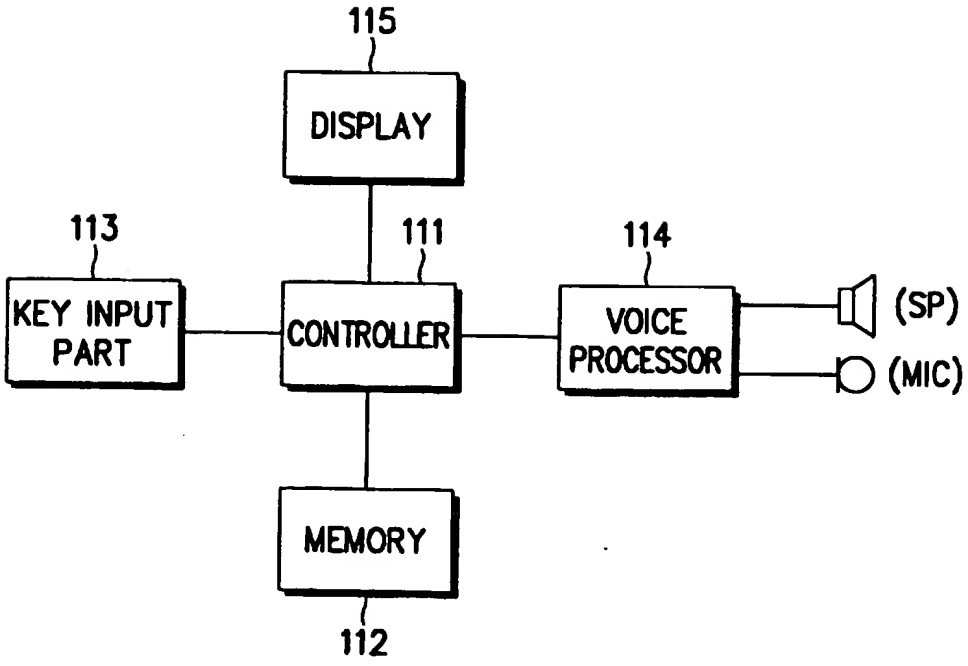
115
DISPLAY
113
111
114
KEY INPUT PART
CONTROLLER
VOICE PROCESSOR
(SP)
(MIC)
MEMORY
112

FIG. 1

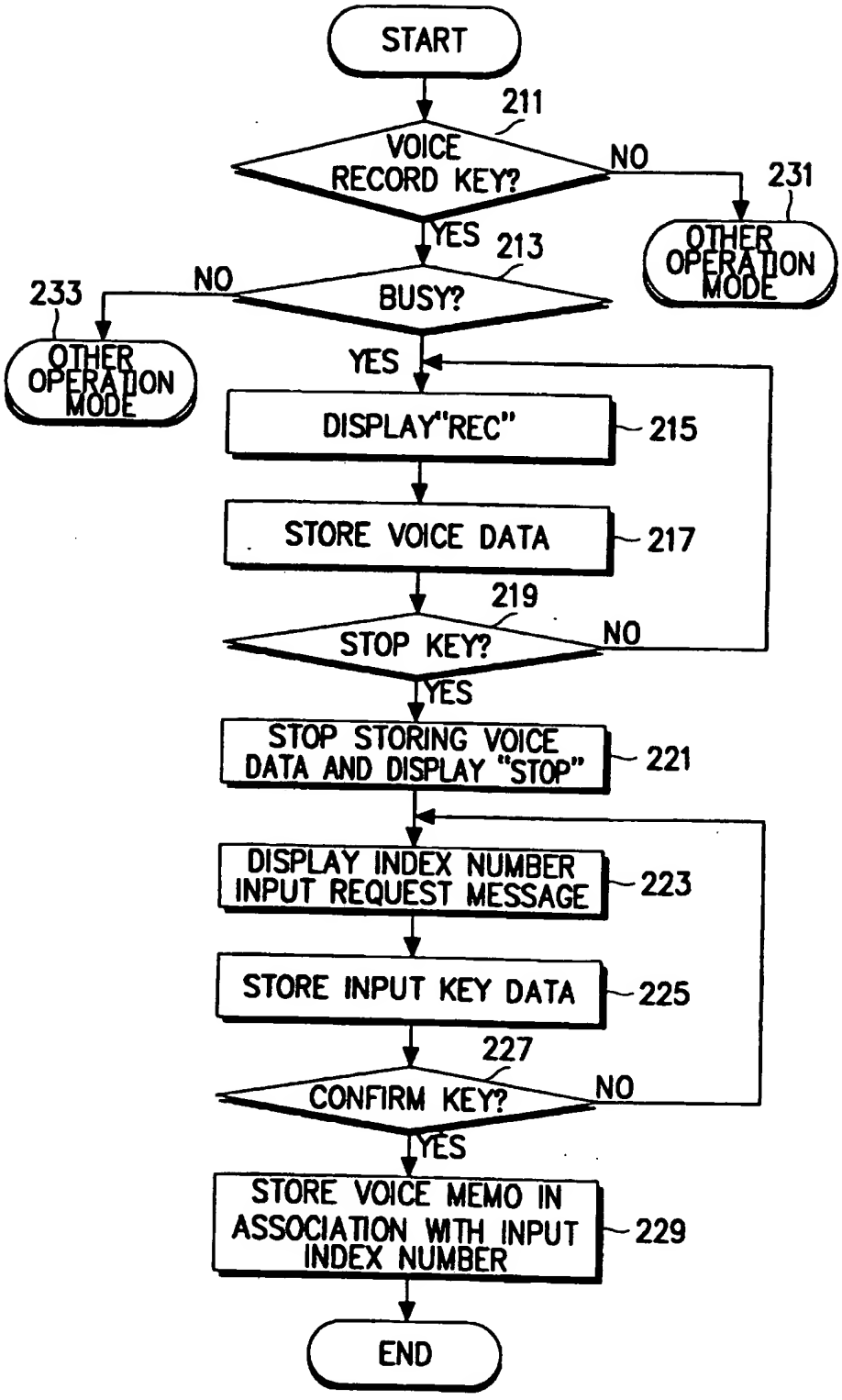
START
211
VOICE RECORD KEY?
NO
231
OTHER OPERATION MODE
YES
213
BUSY?
NO
233
OTHER OPERATION MODE
YES
DISPLAY"REC"
215
STORE VOICE DATA
217
219
STOP KEY?
NO
YES
STOP STORING VOICE DATA AND DISPLAY "STOP"
221
DISPLAY INDEX NUMBER INPUT REQUEST MESSAGE
223
STORE INPUT KEY DATA
225
227
CONFIRM KEY?
NO
YES
STORE VOICE MEMO IN ASSOCIATION WITH INPUT INDEX NUMBER
229
END

FIG. 2

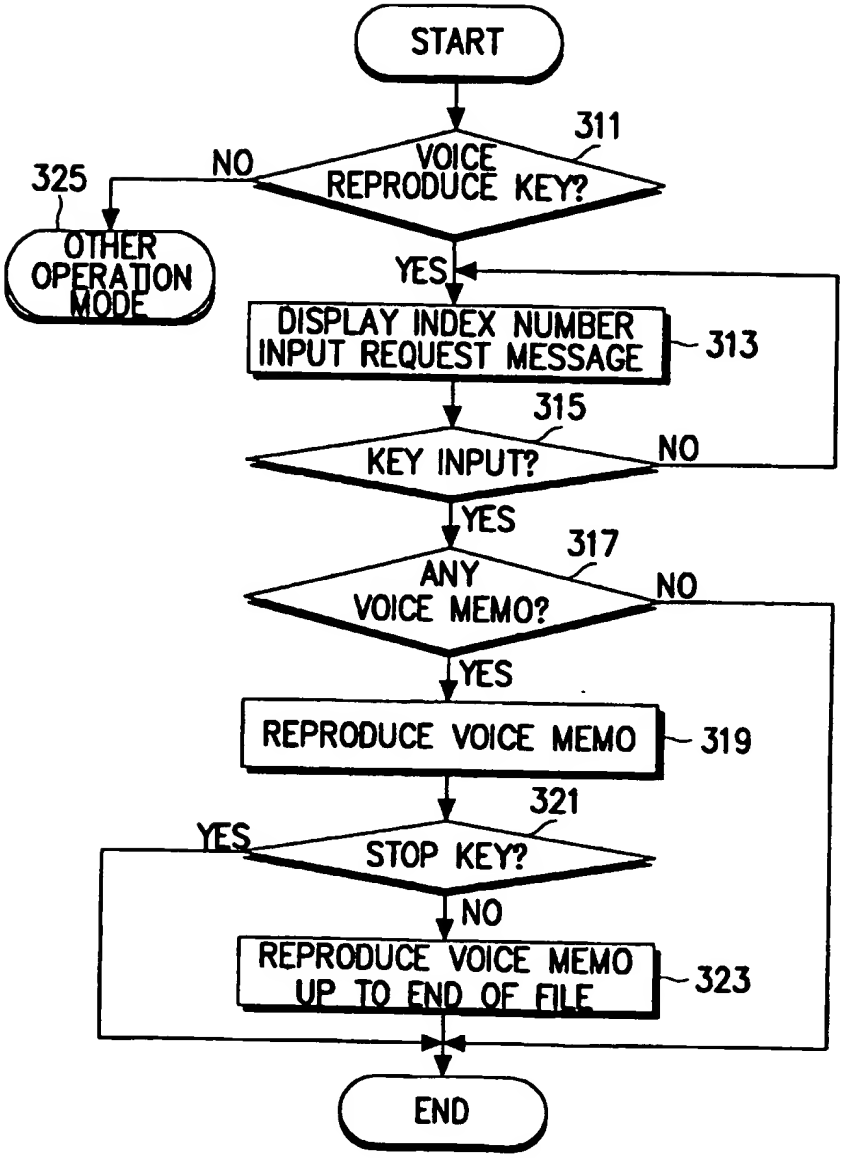
START
311
VOICE REPRODUCE KEY?
NO
325
OTHER OPERATION MODE
YES
DISPLAY INDEX NUMBER INPUT REQUEST MESSAGE
313
315
KEY INPUT?
NO
YES
317
ANY VOICE MEMO?
NO
YES
REPRODUCE VOICE MEMO
319
321
YES
STOP KEY?
NO
REPRODUCE VOICE MEMO UP TO END OF FILE
323
END

FIG. 3

METHOD OF RECORDING AND REPRODUCING VOICE MEMOS

BACKGROUND OF THE INVENTION

The present invention relates to recording and reproducing voice memos in a portable terminal such as a portable telephone.

The fundamental function of a portable telephone is the exchange of voice signals for a call service. Additional service functions provide the user with various conveniences. For example, the additional services may include an absent subscriber message service for which a short voice message is recorded announcing that the user cannot answer the call at the moment.

In such a portable telephone, when a user receives important information from the other party during a call, he cannot make a memo of it, unless there is a pen and scratch paper to hand. Therefore, the user must carry a pen and scratch paper with him for just such a situation, which is troublesome. Even though the user has the pen and scratch paper, it can be annoying to have to make notes during the call.

SUMMARY OF THE INVENTION

The object of the present invention is to provide a convenient solution to this problem and this object is achieved by providing a voice memo function which can be implemented using the existing functions of converting an analogue voice signal to digital data, for transmission

to the other party and reproducing the voice signal in the reverse operation.

Accordingly, the present invention provides a method of recording and reproducing a short voice memo in a portable terminal, comprising:

detecting a voice record key operation during a call and in response converting an input voice signal to voice data and storing the voice data in a voice memory; and

detecting a voice reproduce key operation and in response reproducing the voice signal using a speaker of the portable terminal.

Preferably, the voice data signal is converted and voice data is stored until a stop key operation is detected. Preferably, the stored voice data is recorded in a voice memo table. In these circumstance, the method preferably comprises, after the detection of the stop key operation, detecting an index number input and recording the stored voice data in a position in the voice memo table associated with the index number input. After the detection of the stop key operation, but before the detection of the index number input, an index number input request message may be displayed.

Preferably, the voice signal is reproduced from the voice memo table. The method preferably comprises, after the detection of the voice reproduce key operation, detecting an index number input and reproducing the voice data recorded in a position in the voice memo table associated with the index number input. After the detection of the

voice reproduce key operation, but before the detection of the index number input, an index number input request message may be displayed.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will now be described by way of example with reference to the accompanying drawings, in which:

FIG. 1 is a block diagram illustrating a portable telephone to which the present invention may be applied;

FIG. 2 is a flow chart illustrating a procedure for recording a short voice memo in a portable telephone according to the present invention; and

FIG. 3 is a flow chart illustrating a procedure for reproducing a short voice memo recorded in a portable telephone according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 is a block diagram of a portable telephone, which illustrates only the elements necessary for implementation of the present invention, for simplicity. Referring to FIG. 1, a controller 111 controls the overall operation of the portable telephone, and in particular, controls a display 115, a voice processor 114 and a memory 112 according to key data input from a key input part 113. The memory 112 permanently stores a program for controlling the overall operation of the portable telephone and temporarily stores data generated during execution of the program.

The key input part 113 includes numeric keys and function

keys, and provides the controller 111 with key data generated according to key manipulation by the user. The voice processor 114 is composed of a PCM (Pulse Code Modulation) codec and a compression/expansion device, converts (or modulates) an analogue voice signal input from a microphone MIC to digital data, and converts (or demodulates) digital data provided from the controller 111 to an analogue voice signal which is provided to a speaker SP. The display 115, an LCD (Liquid Crystal Display), displays various display data under the control of the controller 111.

The operation of the portable telephone will now be described. Referring to FIG. 2, the controller 111 examines in step 211 whether a voice record key is input (or depressed). When the voice record key is input, the controller 111 proceeds to step 213. Otherwise, when the voice record key is not input, the controller 111 proceeds to step 231 to perform other operation mode. Here, the voice record key is implemented by an existing key prepared in the portable telephone, and in the exemplary embodiment, it is implemented by a clear key.

Upon detection of the voice record key input, the controller 111 examines in step 213 whether the portable telephone is busy. If the portable telephone is busy, the controller 111 proceeds to step 215. Otherwise, if the portable telephone is not busy, the controller 111 proceeds to step 231 to perform other operation mode.

When the portable telephone is busy, the controller 111

displays a recording sign "REC" on a display 115 in step 215. Thereafter, in step 217, the controller 111 converts a voice signal input from the speaker SP to voice data and temporarily stores the voice data in a file.

After storage of the voice data, the controller 111 determines in step 219 whether a stop key is input. When the stop key is input, the controller 111 proceeds to step 221. However, when the stop key is not input, the controller 111 returns to step 215 to continuously record the voice data. In the exemplary embodiment, the stop key is implemented by re-input of the clear key.

Upon detection of the stop key input, the controller 111 stops recording the voice data and displays a stop sign "STOP" on the display 115, in step 221.

Thereafter, in step 223, the controller 111 displays on the display 115 a message for requesting input of an index number to be assigned to the recorded voice memo in step 223, and stores key data for a key input in step 225.

Then, in step 227, the controller 111 examines whether a confirm key is input. When the confirm key is input, the controller 111 proceeds to step 229. Otherwise, when the confirm key is not input, the controller 111 returns to step 223 to continuously display the index number input request message. In the exemplary embodiment, the confirm key is also implemented by the clear key.

Upon detection of the confirm key input, the controller 111 stores the previously recorded voice memo in a voice memo table of the memory 112 in association with the input index number in step 229, thereby completing the procedure for recording the short voice memo during a call according to the present invention.

Table 1 shows a voice memo table in which several files for the short voice memos recorded during the call are stored, by way of example.

[TABLE 1]

Index	Voice Memo
1	Michael's Phone Number is 777-7777
2	Account Number is 93-28374-83374
3	.....
...	.....

Next, the procedure for reproducing a short voice memo recorded as in Table 1 will be described with reference to FIG. 3. Referring to FIG. 3, the controller 111 examines in step 311 whether a voice reproduce key is input. When the voice reproduce key is input, the controller 111 proceeds to step 313. Otherwise, when the voice reproduce key is not input, the controller 111 proceeds to step 325 to perform a normal operation. Here, for the voice reproduce key, an existing key prepared in the portable telephone is used.

Upon detection of the voice reproduce key input, the controller 111 displays on the display 115 a message for

requesting input of an index number for a voice memo to reproduce, in step 313. The controller 111 then determines in step 315 whether a key is input in response to the index number input request message. When the key is input, the controller 111 proceeds to step 317; otherwise, when the key is not input, the controller 111 returns to step 313 to continuously display the index number input request message.

Upon detection of the key input in response to the index number input request message, the controller 111 determines in step 317 whether there is a voice memo associated with an index number corresponding to the key input. When there is the voice memo associated with the index number, the controller 111 proceeds to step 319; otherwise, the controller 111 ends the procedure.

Upon detection of the voice memo associated with the index number, the controller 111 reproduces the voice memo using the speaker SP in step 319, and determines in step 321 whether a stop key is input. When the stop key is input, the controller 111 ends the procedure; otherwise, the controller 111 proceeds to step 323 to reproduce the voice memo up to an end of the file (EOF) in step 323, thereby completing the short voice memo reproducing process according to the present invention.

As can be appreciated from the foregoing, a user can readily record a short voice memo in the portable telephone, when necessary. Therefore, the novel portable telephone has increased efficiency of use.

CLAIMS

1. A method of recording and reproducing a short voice memo in a portable terminal, comprising:

detecting a voice record key operation during a call and in response converting an input voice signal to voice data and storing the voice data in a voice memory; and

detecting a voice reproduce key operation and in response reproducing the voice signal using a speaker of the portable terminal.

2. A method according to claim 1 in which the voice data signal is converted and voice data is stored until a stop key operation is detected.

3. A method according to claim 2 in which the stored voice data is recorded in a voice memo table.

4. A method according to claim 3 comprising, after the detection of the stop key operation, detecting an index number input and recording the stored voice data in a position in the voice memo table associated with the index number input.

5. A method according to claim 4 comprising, after the detection of the stop key operation, but before the detection of the index number input, displaying an index number input request message.

6. A method according to any one of claims 3-5 in which the voice signal is reproduced from the voice memo table.

7. A method according to claim 6 further comprising, after the detection of the voice reproduce key operation, detecting an index number input and reproducing the voice data recorded in a position in the voice memo table associated with the index number input.

8. A method according to claim 7 comprising, after the detection of the voice reproduce key operation, but before the detection of the index number input, displaying an index number input request message.

9. A method of recording and reproducing a short voice memo in a portable terminal, substantially as described herein with reference to and/or as illustrated in FIGs. 2 and 3 of the accompanying drawings.

The Patent Office

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Application No: GB 9914179.8 **Examiner:** Hannah Bryant
Claims searched: 1-9 **Date of search:** 1 December 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): H4L (LECX)

Int Cl (Ed.6): H04B 1/38, HO4M 1/65, 1/72, H04Q 7/32

Other: Online: WPI EPODOC JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB2289192A	(NEC) see whole document	1-3 and 6
X	EP0762711A2	(NOKIA) see whole document	1-3 and 6
X	WO99/26393	(ERICSSON) see whole document	1-3 and 6
X	WO99/11048	(ERICSSON) see whole document	1-3 and 6
X	WO98/54878	(MARSHALL) see pages 1 and 2	1-2
X	JP9098228	(KOKUSAI) see abstract	1-3 and 6
X	JP9027840	(NIPPON) see abstract	1-3 and 6
X	US5867793	(DAVIS) see whole document	1-3 and 6

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P Document published on or after the declared priority date but before the filing date of this invention.
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